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ENTOMOLOGY.

ON THE PARASITES OF THE HESSIAN FLY.¹—The paper consists of a digest of a communication on the same subject now in press in the Proceedings of the U. S. National Museum. It gives the synonymy of *Merisus destructor* (Say), showing the difficulty that has been encountered in the past in properly locating it generically. It then reviews what was known of the habits of the species by earlier authors and, on account of the insufficiency of previous descriptions, gives a full and detailed description. The descriptions of Herrick, Fitch and Packard are shown to refer to this species rather than to any other so far known. The species never occurs in the apterous condition.

Merisus (Homoporus) subapterus, n. sp., is then described and separated from *destructor*, the wingless specimens referred to by Say and Herrick under this last species being considered as belonging to *subapterus*. *Subapterus* is exceptionally winged. *Destructor* is, on an average, of smaller size, more uniformly metallic in color; has a flatter abdomen with yellowish spot at base; has the antennæ similar in both sexes and either pale brown or blackish brown; has the coxæ metallic black, the femora brown or black except towards tip, the paler parts of the legs whiter than in *subapterus*, and does not, so far as we now know, occur in the apterous condition.

Subapterus is, on the average, larger; of darker color and less metallic, with the flagellum of the antennæ pale in the male and black in the female; the abdomen much more rounded and without the pale spot; the coxæ, trochanters, femora and basal part of tibiæ honey-yellow. It occurs mostly in the wingless condition.

The paper next treats of *Eupelmus allynii* French, showing that it is parasitic on both *Isosoma hordei* and *I. tritici*, as well as on the Hessian fly. The polyphagic habit of this genus is then shown, and the experience of the author is given in breeding species from Lepidopterous eggs, from Orthopterous eggs, from Hemipterous eggs, from Cynipid galls, from Lepidopterous larvæ, from Coleopterous larvæ and from free Cecidomyid larvæ.

Tetrastichus productus, n. sp., is described and the inference drawn from the habits of the genus that it may be a secondary parasite.

Platygaster herrickii Packard is then treated of with the conclusion that *P. error* Fitch is parasitic on some other insect and not on the Hessian fly. The statements of both Herrick and Professor A. J. Cook are then considered in reference to the oviposition of this species in the eggs of the Hessian fly. The author, while disinclined to oppose direct observations when asserted, even

¹ Abstract of a paper read before the Am. Ass. Adv. Sci. at Ann Arbor, by C. V. Riley.

when such conflict with all that has before been known or with previously uniform unity of habit, still feels that the observations need verification, and that it is probable that both Herrick and Cook mistook the young Hessian fly larvæ for the eggs.

Another species of *Tetrastichus* to which Professor S. A. Forbes has given the MS. name of *carinatus*, is briefly referred to as being in all probability a secondary parasite, and a single *Microgaster* is mentioned but not described, as some doubt exists as to whether it is parasitic on the Hessian fly, although it was bred from straw infested by this last.

FORBES' REPORT ON THE NOXIOUS INSECTS OF ILLINOIS FOR 1884.—Professor Forbes' third report abounds in new matter of interest both to the entomologist and the agriculturist. Besides the new *Crambus* feeding on the roots of the corn, two leaf-rolling moths are described, as well as the corn aphid, with notes on other corn insects. Among the wheat insects there are fresh contributions to our knowledge of the Hessian fly and its parasites, the facts ascertained strongly suggesting the hypothesis of a normal completion, before harvest, of the transformation of a considerable part of the destructive spring brood of the larvæ. Three new parasites are described, viz: *Pteromalus pallipes*, *Pt. fulvipes*, and *Tetrastichus carinatus*. The wheat midge is re-described in all its stages and new observations on its habits are presented. Several pages are devoted to the grass worm (*Laphygma frugiperda*), some clover insects are described, as well as insects injurious to the smaller fruits, as the apple and pear, and some shade trees. Though the report is a somewhat miscellaneous one it contains considerable novel matter. Many of the illustrations are unequal and some are not so good as they should be, probably from lack of means afforded by the State authorities, and the lack of first-class artists. The appendix is exceedingly useful, as it contains general indices to the first twelve reports of the State entomologists of Illinois, the plant index being particularly useful.

FLIGHTS OF LOCUSTS IN EASTERN MEXICO IN 1885.—Much destruction resulting from the presence of great swarms of locusts were reported in the newspapers in Eastern Mexico in September of the present year. While at Cordova, in March last, I was told by Mr. L. H. McCormick, of Chicago, who was then on his way to Vera Cruz from the City of Mexico, that he witnessed a flight of locusts between Esperanza and Orizaba on March 24th. They made the sky dark, and were of the size of our large grasshoppers. I may add that during a month's sojourn in Mexico I did not see any locusts, not even along the stage road from Saltillo to San Miguel. The swarms must be quite local, and originate in the *tierra caliente*, or tropical zone of Central America, south of Mexico.

From Dr. A. A. Russell, of Cordova, to whom I was indebted

for much kindness during a short stay at Cordova, I obtained the following information regarding the destructive locust of that region. Within the last two or three years locusts have devastated portions of Central America, and for two years past they have extended over nearly the whole of the States of Vera Cruz, Oaxaca, Chiapas, Morelia, Michoacan and the intervening country to Matamoras. Dr. Russell lost perhaps \$3000 worth of coffee trees on his plantation, and in a single year spent nearly \$1000 in fighting locusts.

According to his statements the swarms of locusts arrive from Central America over a period lasting from April to November, viz., from seed time to harvest. They deposit their eggs in April and May, the young hatching in from twenty to thirty days, and becoming fledged in three months. The young locusts do the most harm, and travel in dense masses, sometimes six inches deep, leaving the ground behind them black, as if burned by fire. They are often so thick in the roads that the horses will slip and slide over their crushed bodies. They are particularly destructive to the young coffee plants, gnawing off the bark from the young trees and from the tender branches of large trees, but they do not eat the leaves. Oranges, palms, corn, rice and tobacco plants also greatly suffer from the attacks of this locust. Unfortunately no specimens could be obtained so as to learn which species does this wide-spread damage. It is probable that the insect is *Acrydium americanum*, as we have received specimens from Yucatan. For other accounts of the ravages of locusts in Central America and Mexico, see first report of the U. S. Entomological Commission, pp. 460-465; also third report, appendix, p. 60.—*A. S. Packard*.

CHINESE INSECT WHITE WAX.—At the last meeting of the British Association, Mr. A. Hosie read a paper on "Chinese insect white wax," in which he stated that, although the province of Szu-chuan, in Western China, where he had been stationed for the last three years, was the chief wax insect and wax-producing country in the empire, insects and wax were found in other provinces. Mr. Hosie was called upon by the Foreign Office to collect for Sir Joseph Hooker specimens connected with, and all possible information on the subject of this industry, and the present paper was a revision, with additions, of a report already published in a Parliamentary paper in February last. He described the insect-producing country, the tree on which the insects were propagated, the insects themselves, and their transit from the valley of Chien-chang, their breeding ground, in the west of Szu-chuan, across the mountains to Chiating Fu, the habitat of the wax tree. The tree was then described, and details were given of the treatment of the insects, their suspension on the trees, the depositing of the wax, and of a parasite on the insects. The method of re-

moving the wax from the branches of the tree and of preparing it for market was then explained. Thereafter Mr. Hosie detailed the result of an examination of the insects after the wax had been fully deposited, and finally passed to the annual quantity of insect white wax produced, its value and uses.—*English Mechanic*.

PALPI OF INSECTS.—Examination of above fifty individuals of diverse forms of Orthoptera and Coleoptera have caused M. F. Plateau to reach the following conclusions respecting the use of the palpi: (1) During the act of eating they remain inactive. (2) Deprivation of the maxillary palpi does not hinder the insects from eating as usual. (3) Loss of the labial palpi has no more effect. (4) Smell remains the same after the four palpi are taken away. (5) The amputation of all the palpi does not prevent these insects from recognizing and seizing their food. (6) Loss of all the palps does not prevent them from feeding as usual.

ENTOMOLOGICAL NEWS.—We have received from Dr. G. Mayr a detailed work on fig insects, consisting of 105 closely-printed pages, with three excellent plates.—Dr. J. A. Lintner, the State entomologist of New York, has issued a lecture on cut-worms, read before the State Agricultural Society in January last.—One of the most valuable contributions to entomology of the year is Mr. Poulton's "Farther notes on the markings and attitudes of lepidopterous larvæ, together with a complete account of the life-history of *Sphinx ligustri* and *Selenia illunaria*," in the second part of the Transactions of the Entomological Society of London, for 1885. Among the topics discussed in this paper are the following: The utilization of the changes in color before pupation for protective purposes, and an anatomical reason for the special protection of larvæ, wherein the author shows that the various means of protection in larvæ are always of a passive kind. When active (flagella) they seem to be directed against the attacks of ichneumons, which produce fatal results in quite another way. "Nearly all the means of defence against other enemies are such as tend to prevent the larva from being seen or touched, rarely such as to be of any avail when actually attacked." This Society has within a few months obtained a royal charter.—The death of Mr. H. K. Morrison, so well known as a zealous and successful collector, in May last, was sudden. There is a good opening for one or more efficient collectors in this country to succeed Bel-frage, Boll and Morrison.

ZOOLOGY.

RECENT WORK ON BALANOGLOSSUS.—W. Bateson¹ has recently investigated the morphology of Balanoglossus, and thrown a great deal of light upon this hitherto obscure and little understood animal. A summary of his results is as follows: There is

¹Quarterly Journal Mic. Soc. Suppl., 1885.